prescribed field alignment. It is dependent upon the ability of the user to manually, accurately identify corresponding anatomical landmarks in the image pair. A first pass generates registration parameters from user-provided anatomical match point coordinates. A second pass uses the initial registration parameters and image information to further improve the registration quality by maximizing cross-correlation between segments of the image pair.

Claim 1 as now amended patentably distinguishes over *McParland et al.* In particular, Claim 1 now calls for processing means which generates coarse aligned digital portal image signals (DPIS) and digital simulation image signals (DSIS), means determining from the coarse aligned signals overlapping regions of the images, and fine alignment means generating matched DPIS and DSIS from the coarse aligned signals for the overlapping regions. The claimed apparatus does not require identification of any information in the images such as the anatomical match points required by *McParland et al.* This is accomplished by means which first coarse align the images, means which determine overlapping portions of the two images and means then performing the fine alignment on the coarse aligned signals for the overlapping portions. This permits applicants to align the images without identifying any of the information content of the images as is required by *McParland et al.*

McParland et al. does not teach or suggest the apparatus of Claim 1 which is therefore patentable over the reference.

Claims 3-19 all depend from Claim 1 and are therefore patentable over *McParland et al.* for the same reasons. Claim 21 is directed to apparatus for matching portal images to control radio therapy/diagnostic equipment which includes, *inter alia*, tracking means for tracking movement between successive sets of digital portal image signals. *McParland et al.* does not teach or suggest how tracking could be accomplished using digitized portal image signals. Claims 22-25 depend from Claim 21 and are therefore patentable over *McParland et al.* for the same reasons.
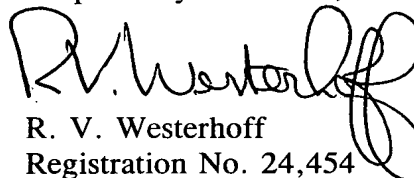
Claim 26 is an independent apparatus claim for automatically matching an x-ray image with a reference image which includes means digitizing the images and processing means processing the digital signals from the two images

without input of any physical dimensions or any features within the images to generate matched digital image signals, and display means generating the display from the matched digital image signals. As discussed, *McParland et al.* specifically requires that the user identify anatomical match points in the two images to even begin to perform an alignment.

Claims 27 and 28 depend from Claim 26 and are therefore patentable over *McParland et al.* for the same reasons.

In view of the above, it is requested that this Amendment Under Rule 312 be entered, and that the Examiner reconsider the claims as now presented in view of the newly cited documents and allow the claims as now presented.

Respectfully submitted,

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